Amendments to the Claims:

Please amend claims 1, 52, 55 and 59. Following is a complete listing of the claims pending in the application, as amended:

1. (Currently amended) A microfeature workpiece planarizing system, comprising:

a first planarizer including a first planarizing medium;

a second planarizer including a second planarizing medium, the second planarizing medium being different from the first planarizing medium;

a workpiece handling system having one or more carrier assemblies for positioning workpieces at the first planarizer and/or the second planarizer; and

a programmable controller, the controller being programmed to:

receive thickness change information indicative of a thickness change caused by planarizing a preceding microfeature workpiece in a first process with the first planarizer and in a second process with at least one of the first and second planarizers;

determine a modified thickness change by reducing the thickness change by a thickness offset associated with material removal by the second process;

determine a material removal factor for the preceding microfeature workpiece as a function of the modified thickness change and a planarizing time of the preceding microfeature workpiece on the first planarizer;

receive initial thickness information indicative of a target thickness change for an incoming microfeature workpiece;

~~estimating~~ estimate a target planarizing time for the first process as a function of the target thickness change and the material removal factor; and

cause the first planarizer to planarize the incoming microfeature workpiece for the target planarizing time.

2. (Original) The microfeature workpiece planarizing system of claim 1 wherein the thickness change information comprises a pre-planarizing thickness measurement of the preceding microfeature workpiece and a post-planarizing thickness measurement of the preceding microfeature workpiece.

3. (Original) The microfeature workpiece planarizing system of claim 1 wherein estimating the target planarizing time comprises:

determining an adjusted target thickness change by reducing the target thickness change by the thickness offset; and

dividing the adjusted target thickness change by the material removal factor.

4. (Original) The microfeature workpiece planarizing system of claim 1 wherein determining the material removal factor further comprises averaging the material removal factor for the preceding microfeature workpiece with the material removal factor determined for at least one previously-processed microfeature workpiece.

5. (Original) The microfeature workpiece planarizing system of claim 1 wherein determining the material removal factor comprises dividing the modified thickness change by the planarizing time of the preceding microfeature workpiece on the first planarizer.

6. (Original) The microfeature workpiece planarizing system of claim 1 wherein the thickness offset is a constant value for a plurality of planarizing cycles.

7. (Original) The microfeature workpiece planarizing system of claim 1 wherein the thickness offset is a constant value determined as an average material removal for the second process.

8. (Original) The microfeature workpiece planarizing system of claim 1 wherein the thickness offset varies over time.

9. (Original) The microfeature workpiece planarizing system of claim 1 wherein the thickness offset varies over time as a function of anticipated change in material removal rate for the second process.

10. (Original) The microfeature workpiece planarizing system of claim 1 wherein the second process is adapted to remove material at a rate that is independent of the material removal factor.

11. (Original) A method for processing microfeature workpieces, comprising:

subjecting a first microfeature workpiece to a first process for a first process time, the first process changing a thickness of the first microfeature workpiece at a first rate;

subjecting the first microfeature workpiece to a second process, the second process changing the thickness of the first microfeature workpiece at a second rate that differs from the first rate;

determining a thickness change of the first microfeature workpiece attributable to both the first process and the second process;

calculating an offset thickness change by offsetting the thickness change by a thickness offset associated with the second process;

determining a thickness change factor for the first microfeature workpiece as a ratio of the offset thickness change and the first processing time;

measuring a second pre-processing thickness of a second microfeature workpiece;

determining a target thickness change for the second microfeature workpiece by comparing the second pre-processing thickness with a target thickness of the second microfeature workpiece;

determining a target processing time as a function of the target thickness change and the thickness change factor;

subjecting the second microfeature workpiece to the first process for the target processing time; and

subjecting the second microfeature workpiece to the second process.

12. (Original) The method of claim 11 wherein the first process and the second process each comprise a planarizing process in which material is removed from a surface of a microfeature workpiece.

13. (Original) The method of claim 11 wherein the first process and the second process each comprise a deposition process in which material is deposited on a surface of a microfeature workpiece.

14. (Original) The method of claim 13 wherein the first microfeature workpiece is subjected to the second process after it is subjected to the first process.

15. (Original) The method of claim 11 wherein the first microfeature workpiece is subjected to a first segment of the second process before it is subjected to the first process and is subjected to a second segment of the second process after it is subjected to the first process.

16. (Original) The method of claim 11 wherein determining the thickness change factor comprises dividing the offset thickness change by the first processing time.

17. (Original) The method of claim 11 wherein determining the thickness change factor comprises dividing the offset thickness change by the first processing time and determining the target processing time comprises dividing the target thickness change by the thickness change factor.

18. (Original) The method of claim 11 wherein determining the target processing time comprises:

determining an adjusted target by reducing the target thickness change by the thickness offset; and

dividing the adjusted target by the thickness change factor.

19. (Original) The method of claim 11 wherein the thickness offset is a constant value for a plurality of microfeature workpieces.

20. (Original) The method of claim 11 wherein the thickness offset is a constant value determined as an average thickness change for the second process.

21. (Original) The method of claim 11 wherein the thickness offset varies over time.

22. (Original) The method of claim 11 wherein the thickness offset varies over time as a function of anticipated change in a rate at which the second process changes the microfeature workpiece thickness.

23. (Original) The method of claim 11 wherein determining the thickness change factor further comprises averaging the thickness change factor for the first microfeature workpiece with the thickness change factor determined for at least one previously-processed microfeature workpiece.

24. (Original) The method of claim 11 wherein the second process changes the thickness of the first microfeature workpiece at a rate that is independent of the thickness change factor.

25. (Original) The method of claim 11 wherein the thickness change of the first microfeature workpiece is determined by measuring a pre-processing thickness of the first microfeature workpiece before subjecting the first microfeature workpiece to the first and second processes; measuring a post-processing thickness of the first microfeature workpiece after subjecting the first microfeature workpiece to the first and second processes; and comparing the pre-processing thickness and the post-processing thickness.

26. (Original) A method for planarizing microfeature workpieces, comprising:

measuring a first pre-planarizing thickness of a first microfeature workpiece;

planarizing the first microfeature workpiece for a first planarizing time on a main planarizer;

planarizing the first microfeature workpiece in a secondary planarizing process that comprises planarizing on at least one of the main planarizer and a secondary planarizer;

measuring a post-planarizing thickness of the first microfeature workpiece;

determining a thickness change of the first microfeature workpiece by comparing the first pre-planarizing thickness and the post-planarizing thickness;

calculating an offset thickness change by offsetting the actual thickness change by a thickness offset corresponding to an amount of material removed by the secondary planarizing process;

determining a material removal factor for the first microfeature workpiece as a ratio of the offset thickness change and the first planarizing time;

measuring a second pre-planarizing thickness of a second microfeature workpiece;

determining a target thickness reduction for the second microfeature workpiece by comparing the second pre-planarizing thickness with a target thickness of the second microfeature workpiece;

determining a target planarizing time as a function of the target thickness reduction and the material removal factor;

planarizing a surface of the second microfeature workpiece for the target planarizing time on the main planarizer; and

planarizing the surface of the second microfeature workpiece in the secondary planarizing process.

27. (Original) The method of claim 26 wherein the secondary planarizing process comprises planarizing on the main planarizer.

28. (Original) The method of claim 26 wherein determining the material removal factor comprises dividing the offset thickness change by the first planarizing time.

29. (Original) The method of claim 26 wherein determining the material removal factor comprises dividing the offset thickness change by the first planarizing time and determining the target planarizing time comprises dividing the target thickness reduction by the material removal factor.

30. (Original) The method of claim 26 wherein determining the target planarizing time comprises:

determining an adjusted target by reducing the target thickness reduction by the thickness offset; and

dividing the adjusted target by the material removal factor.

31. (Original) The method of claim 26 wherein the thickness offset is a constant value for a plurality of microfeature workpieces.

32. (Original) The method of claim 26 wherein the thickness offset is a constant value determined as an average material removal for the secondary planarizing process.

33. (Original) The method of claim 26 wherein the thickness offset varies over time.

34. (Original) The method of claim 26 wherein the thickness offset varies over time as a function of anticipated change in a rate at which the secondary planarizing process reduces the microfeature workpiece thickness.

35. (Original) The method of claim 26 wherein determining the material removal factor further comprises averaging the material removal factor for the first

microfeature workpiece with the material removal factor determined for at least one previously-processed microfeature workpiece.

36. (Original) The method of claim 26 wherein the secondary planarizing process removes material from the surface of the first microfeature workpiece at a rate that is independent of the material removal factor.

37. (Original) A method for processing microfeature workpieces, comprising:

subjecting a first microfeature workpiece to a first process for a first process time, the first process changing a thickness of the first microfeature workpiece;

subjecting the first microfeature workpiece to a second process, the second process also changing the thickness of the first microfeature workpiece;

determining a thickness change of the first microfeature workpiece attributable to the first process and the second process;

determining a thickness change factor for the first microfeature workpiece as a ratio of a) the thickness change minus a thickness correction, and b) the first process time;

determining a target thickness change for a second microfeature workpiece;

determining a target processing time as a function of the target thickness change and the thickness change factor; and

subjecting the second microfeature workpiece to the first process for the target processing time.

38. (Original) The method of claim 37 wherein the thickness correction is associated with an amount of material added or removed by the second process.

39. (Original) The method of claim 37 further comprising subjecting the second microfeature workpiece to the second process.

40. (Original) The method of claim 37 wherein determining the thickness change factor comprises dividing a) the thickness change minus the thickness correction, by b) the first processing time.

41. (Original) The method of claim 37 wherein determining the material removal factor comprises dividing a) the thickness change minus a thickness correction, by b) the first planarizing time, and wherein determining the target planarizing time comprises dividing the target thickness reduction by the material removal factor.

42. (Original) The method of claim 37 wherein determining the target planarizing time comprises:

determining an adjusted target by reducing the target thickness reduction by the thickness correction; and

dividing the adjusted target by the material removal factor.

43. (Original) The method of claim 37 wherein the thickness correction is determined as an average material removal for the at least one second planarizer.

44. (Original) The method of claim 37 wherein the thickness correction varies over time.

45. (Original) The method of claim 37 wherein determining the material removal factor further comprises averaging the material removal factor for the preceding microfeature workpiece with the material removal factor determined for at least one previously-processed microfeature workpiece.

46. (Original) The method of claim 37 wherein the at least one second planarizer removes material from the surface of the first microfeature workpiece at a rate that is independent of the material removal factor.

47. (Original) The method of claim 37 wherein the first process and the second process each comprise a planarizing process in which material is removed from a surface of a microfeature workpiece.

48. (Original) The method of claim 37 wherein the first process and the second process each comprise a deposition process in which material is deposited on a surface of a microfeature workpiece.

49. (Original) A method for planarizing microfeature workpieces, comprising:

planarizing the first microfeature workpiece in a main planarizing process for a first planarizing time, the main planarizing process comprising planarizing on a first planarizer;

planarizing the first microfeature workpiece in a secondary planarizing process that comprises planarizing on the first planarizer, at least one process variable of the planarizing of the second process differing from the at least one process variable of the planarizing of the first process;

determining a thickness change of the first microfeature workpiece attributable to the main planarizing process and the secondary planarizing process;

determining a material removal factor for the first microfeature workpiece as a ratio of a) the thickness change minus a thickness correction, and b) the first planarizing time;

determining a target thickness reduction for a second microfeature workpiece;

determining a target planarizing time as a function of the target thickness reduction and the material removal factor; and

planarizing the second microfeature workpiece in the main planarizing process for the target planarizing time.

50. (Original) The method of claim 49 further comprising planarizing the second microfeature workpiece in the secondary planarizing process.

51. (Original) The method of claim 49 wherein the secondary planarizing process further comprises planarizing on a second planarizer.

52. (Original) The method of claim 49 wherein the at least one process variable is a variable other than time.

53. (Original) The method of claim 49 wherein the first microfeature workpiece is planarized in the secondary planarizing process after it is planarized in the main planarizing process.

54. (Original) The method of claim 49 wherein the first microfeature workpiece is subjected to a first segment of the secondary planarizing process before it is subjected to the main planarizing process and is subjected to a second segment of the second planarizing process after it is subjected to the main planarizing process.

55. (Currently amended) The method of claim 49 wherein determining the material removal factor comprises dividing a) the thickness change minus a thickness correction by b) the first planarizing time.

56. (Original) The method of claim 49 wherein determining the target planarizing time comprises:

determining an adjusted target by reducing the target thickness change by the thickness offset; and

dividing the adjusted target by the material removal factor.

57. (Original) The method of claim 49 wherein the thickness correction is a constant value for a plurality of microfeature workpieces.

58. (Original) The method of claim 49 wherein the thickness correction varies over time.

59. (Currently amended) The method of claim 49 wherein determining the material removal factor further comprises averaging the material removal factor for the first microfeature workpiece with the material removal factor determined for at least one previously-processed microfeature workpiece.

60. (Original) The method of claim 49 wherein the secondary planarizing process changes the thickness of the first microfeature workpiece at a rate that is independent of the material removal factor.